Table 27

Time Line of Significant Research and Monitoring Events

"In all the[se] years between the onslaughts of mining, the development of agriculture with extensive irrigation diversions and the urbanization of the San Francisco Bay,...there were only casual observations of its natural history." (Hedgepeth, 1979)

1816/1824 Russian expeditions by von Kotzebue with naturalist Dr. Ivan Eschscholtz. First significant natural history observations of the Bay.

1826 H.M.S. BLOSSOM enters Bay and conducts first extensive survey.

1862 Great Flood. Rains force evacuation of Sacramento and most of Central Valley is underwater. Recovery of estuary system unknown but several Eastern species successfully introduced shortly thereafter.

1888 First stream flow data collected by USGS as part of a special study related to the irrigation of public lands.

1912/1913 Expedition by the United States Bureau of Fisheries steamer the ALBATROSS, the first vessel built specifically for research by any nation. A general biological survey is done during this effort. The work was severely constrained by the choice of sampling equipment and the 12-foot draft limitation of the ALBATROSS, so that in 1945 Frances B. Sumner, chief naturalist for the project, reports that the results are limited to a description of the sampled areas and concludes that "there is little in them on which to base a scientific generalization of more that very limited scope" (Sumner, 1945). From this time until 1958, there was no water quality data collected on a Bay-wide scale.

1917 First baseline information on physical characteristics of the Bay detailed in USGS report on "Hydraulic Mining Debris in the Sierra Nevada (Gilbert, 1917)."

Late 1920's Salinity incursions in the Bay prompt several engineering studies of water conservation, flood control and navigation by the Division of Water Resources.

1930's Decision to build Shasta Dam and other plans debated including a bypass around the Delta for irrigation water. Little biological and fisheries information is developed or presented as part of these debates.

1949 Dickey Act passes creating California Water Quality Control Board and the Regional Boards.

1950's Important studies conducted by Filice (1954, 1958, 1959) and by Jones (1961) on Bay benthic environment. State Board begins to require communities and industries around the Bay to provide or improve waste treatment facilities.

1958 University of California (Sanitary Engineering Research Laboratory) begins a comprehensive water quality investigation for the Bay for the State Water Resources Control Board. It provides the most complete summary of water quality data up to this time. Samples include water, sediments, and fish (Storrs et al., 1963).

1960-70's Most water quality data collected by cooperative efforts of the Regional Boards and waste dischargers, and are specifically related to self-monitoring programs at point source discharges.

1962 A second UC survey conducted of the South Bay area and includes analysis of water quality, sediments, benthos, and plankton. It finds that water quality has deteriorated progressively since 1958. (See Nichols, 1973 for a critique of the UC studies).

1964 San Francisco Bay Conservation and Development Commission established and tasked to study the Bay's physical and biological characteristics in order to develop management plans; some parts of this study were published by Dreisback, 1969.

1969 Porter-Cologne Water Quality Control Act passed.

1969 Kaiser Engineers completes for the State Board the Bay-Delta Water Quality Control Study Program recommending a comprehensive wastewater plan for the Bay which is the basis for a regional wastewater collection treatment and disposal strategy now embodied in the Regional Boards' basin plans.

1970 Interagency agreements made to create the Interagency Ecological Studies Program. Today, the program represents the largest source of environmental data on the estuary.

1971/1978 D-1379 and D-1485 Water Rights Decisions. State Water Resources Control Board establishes conditions for the operation of the State Water Project which require additional monitoring activities related to the effects of altered streamflow on the estuary.

1977 U. S. Army Corps of Engineers completes Dredge Disposal Study which found that dredge material did not pose a threat to aquatic organisms in the estuary.

1982 Formation of the Aquatic Habitat Institute, an independent organization with interests in research and monitoring in the estuary.

1991 San Francisco Estuary Project calls for creation of a Regional Monitoring Program.